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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,069	08/04/2003	Yuqiang Wang	22531-505 CON2	2038

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EXAMINER	
WILLIAMS, LEONARD M	
ART UNIT	**PAPER NUMBER**
1617	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/634,069	WANG ET AL.	
	Examiner	Art Unit	
	Leonard M. Williams	1617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

RD

Detailed Action

Priority

The examiner notes that this is a continuation of 10/199156 now US patent 6620845, which is a continuation of 09/510099 now US patent 6444702.

Examiner notes receipt of the preliminary amendment of 11/12/2003 amending claims 11 and 17. Claim 1 is currently cancelled. Claims 2-18 are pending.

The examiner notes that claims 2-16 simply recite the name of a structure. These claims are being treated as compound claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 2, 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishii et al. (US Patent No. 6392104).

Ishii et al. teach, in col. 11 line 35 to col. 12 line 30, specific adamantane derivatives of formula (1) including 1-amino-3,5-dimethyl-7-adamantanol, 1-methylamino-3-adamantanol, 1-acetylamino-3-adamantanol, and 1-acetylamino-3,5-dimethyl-7-adamantanol anticipating claims 2, 17 and 18.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (US Patent 6392104) as applied to claims 2, 17 and 18 above, and further in view of Greene (Protecting Groups in Organic Synthesis, Wiley and sons, 1981, pages 70-71).

Ishii et al. is as set forth above and is further explained below.

Ishii et al. teach, in col. 1 line 50 to col. 3 line 65, adamantane derivatives useful in pharmaceutical and/or agricultural chemicals wherein the adamantane derivatives are represented by formula (1) wherein X1 represents a hydroxyl group which may be protected by a protecting group, X2 represents a nitro group, an amino group or N-substituted amino group, which may be protected by a protecting group, a hydroxyl group which may be protected by a protecting group, a carboxyl group which may be protected by a protective group, a hydroxymethyl group which may be protected by a protecting group, or an isocyanato group. Further when X2 is an amino group or N-substituted amino group which may be protected by a protective group, X3 and X4 may

be the same or different and each may represent an hydrogen atom, an alkyl group, an amino group or N-substituted amino group which may be protected by a protective group, a hydroxyl group which may be may be protected by a protective group, a carboxyl group which may be protected by a protective group, or an isocyanato group.

Ishii et al. teach, in col. 5 line 50 to col. 6 line 65, the following:

In the adamantane derivative shown by the formula (1), as a protective group for hydroxyl group and hydroxymethyl group (a moiety corresponding to the hydroxyl group of the hydroxymethyl group) there may be mentioned, for instance, t-butyl group, a cycloalkyl group (e.g., cyclohexyl group), an aryl group (e.g., 2,4-dinitrophenyl group), an aralkyl group (e.g., benzyl group, 2,6-dichlorobenzyl group, 3-bromobenzyl group, 2-nitrobenzyl group, 4-dimethylcarbamoylbenzyl group, a benzyl group which may have a substituent such as triphenylmethyl group), tetrahydropyranyl group, a non-polymerizable acyl group [e.g. , a saturated aliphatic acyl group (e.g., a saturated C_{2-6} aliphatic acyl group such as acetyl group, propionyl group, isopropionyl group, butyryl group, isobutyryl group, valeryl group, isovaleryl group, pyvaloyl group, preferably a saturated C_{2-4} aliphatic acyl group), an aromatic acyl group (e.g., a C_{7-13} aromatic acyl group such as benzoyl group, p-phenylbenzoyl, phthaloyl, naphtoyl), an alicyclic acyl group (a cycloalkyl-carbonyl group: such as cyclohexylcarbonyl)], an alkoxycarbonyl group such as a C_{1-6} alkoxy-carbonyl group (e.g., methoxycarbonyl group, ethoxycarbonyl group, propyloxycarbonyl group, isopropyloxycarbonyl group, isobutyloxycarbonyl group, t-butoxycarbonyl group), an alalkyloxycarbonyl group (e.g., benzyloxycarbonyl group, methoxybenzyloxycarbonyl group), a carbamoyl group which

may have a substituent such as a C_{1-6} alkyl group, a C_{6-14} aryl group (e.g., carbamoyl group, methylcarbamoyl group, ethylcarbamoyl group, phenyl carbamoyl group), a dialkylphosphynotioyl group (e.g., dimethylphosphynotioyl group), a diarylphosphynotioyl group (e.g., diophenylphosphynotioyl group). A preferred protective group of hydroxyl group or hydroxymethyl group includes, for instance, a non-polymeric acyl group (specifically, a saturated C_{2-6} aliphatic acyl group etc., more specifically, a saturated C_{2-4} aliphatic acyl group etc.), a C_{1-6} alkoxy-carbonyl group, a carbamoyl group which may have a substituent.

A protective group for amino group includes, for example, protective groups same as the exemplified protective groups for hydroxyl group, such as t-butyl group, an aralkyl group, a non-polymerizable acyl group [e.g., a saturated aliphatic acyl group (e.g., a saturated C_{2-6} aliphatic acyl group, in particular a saturated C_{2-4} aliphatic acyl group), an aromatic acyl group (e.g., a C_{7-13} aromatic acyl group), an alicyclic acyl group], an alkoxy carbonyl group (e.g., a C_{1-6} alkoxy-carbonyl group), an aralkyloxy carbonyl group, a dialkylphosphinotioyl group, a diarylphosphinotioyl group. A preferred protective group of amino group includes, for example, a non-polymerizable acyl group [e.g., a saturated C_{2-6} aliphatic acyl group (especially, a saturated C_{2-4} aliphatic acyl group), a C_{7-13} aromatic acyl group], an alkoxy carbonyl group (especially, a C_{1-6} alkoxy-carbonyl group).

Examples of an N-substituted amino group include a mono- or di-C_{1-6} alkylamino group such as methylamino group, ethylamino group, propylamino group,

dimethylamino group, diethylamino group (preferably, a mono- or di-C_{1-4} alkylamino group).

A protective group for a carboxyl group includes, for instance, an alkoxy group (e.g., a C_{1-10} alkoxy group such as methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, s-butoxy, t-butoxy and hexyloxy group; preferably a C_{1-6} alkoxy group, especially a C_{1-4} alkoxy group), a cycloalkyloxy group (e. g., cyclohexyloxy group), an aryloxy group (e.g., phenoxy group), an aralkyloxy group (e.g., benzyloxy group, diphenylmethyloxy group), a trialkylsilyloxy group (e.g., trimethylsilyloxy group), an amino group which may have a substituent [amino group; an N-substituted amino group (e.g., a mono- or di-C_{1-6} alkylamino group such as methylamino, dimethylamino, ethylamino and diethylamino group)], hydrazino group, an alkoxycarbonylhydrazino group (e.g., t-butoxycarbonylhydrazino group), an aralkyloxycarbonylhydrazino group (e.g., benzyloxycarbonylhydrazino group). A preferred protective group of carboxyl group includes an alkoxy group (especially, a C_{1-6} alkoxy group), an amino group which may have a substituent (e.g., an N-substituted amino group, especially, a mono- or di-C_{1-6} alkylamino group).

An alkyl group includes, for instance, a C_{1-6} alkyl group such as methyl, ethyl, propyl, isopropyl, butyl, isobutyl, s-butyl, t-butyl and hexyl group (preferably, a C_{1-4} alkyl group, more preferably, methyl group or ethyl group)."

Ishii et al. teach, in col. 9 lines 1-5, that the nitrogen atom of an amino group may have one or two substituents and that an adamantane derivative having an acidic group or basic group may form a salt thereof.

Ishii et al. does not teach adamantane derivatives having nitrate groups present such as exemplified in applicant's claims 5, 6, and 14-17. Ishii does not teach explicitly the compounds of claims 3-16.

Greene teaches on pages 70 and 71 that nitrate esters are suitable protecting groups for alcohols and one of ordinary skill in the art at the time the invention was made would realize the equivalence of using nitrate as a protecting group for a hydroxy group with the hydroxy protecting groups detailed in Ishii et al..

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the nitrate esters for the protection of hydroxy and/or methylhydroxy groups in the adamantane derivatives of Ishii et al. and one would have been motivated to do so as Greene teaches that nitrate esters are stable to mildly acidic conditions (thus good for optimizing reaction conditions) and can be cleaved via hydrogenation (a mild deprotecting step). Ishii et al. as set forth above envisioned both hydroxy and methylhydroxy adamantane derivatives with the hydroxy and methylhydroxy groups being protected via protecting groups. As nitrate esters are known protecting groups for alcohols, without evidence to the contrary, the use of nitrate esters as protecting groups for the hydroxy and/or methylhydroxy adamantane derivatives of Ishii et al. is obvious.

Ishii et al. as set forth above envisioned both protected and non-protected amines and salts of the amine and carboxyl groups that may be present on the adamantane derivatives described. The extensive list of protecting groups to be utilized

by Ishii et al. and the fact that the Ishii et al. core structures are identical to that of the present compounds obviates the various embodiments presented in claims 4-16.

Conclusion .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard M Williams whose telephone number is 571-272-0685. The examiner can normally be reached on MF 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan can be reached on 571-272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LMW

SREENI PADMANABHAN
SUPERVISORY PATENT EXAMINER